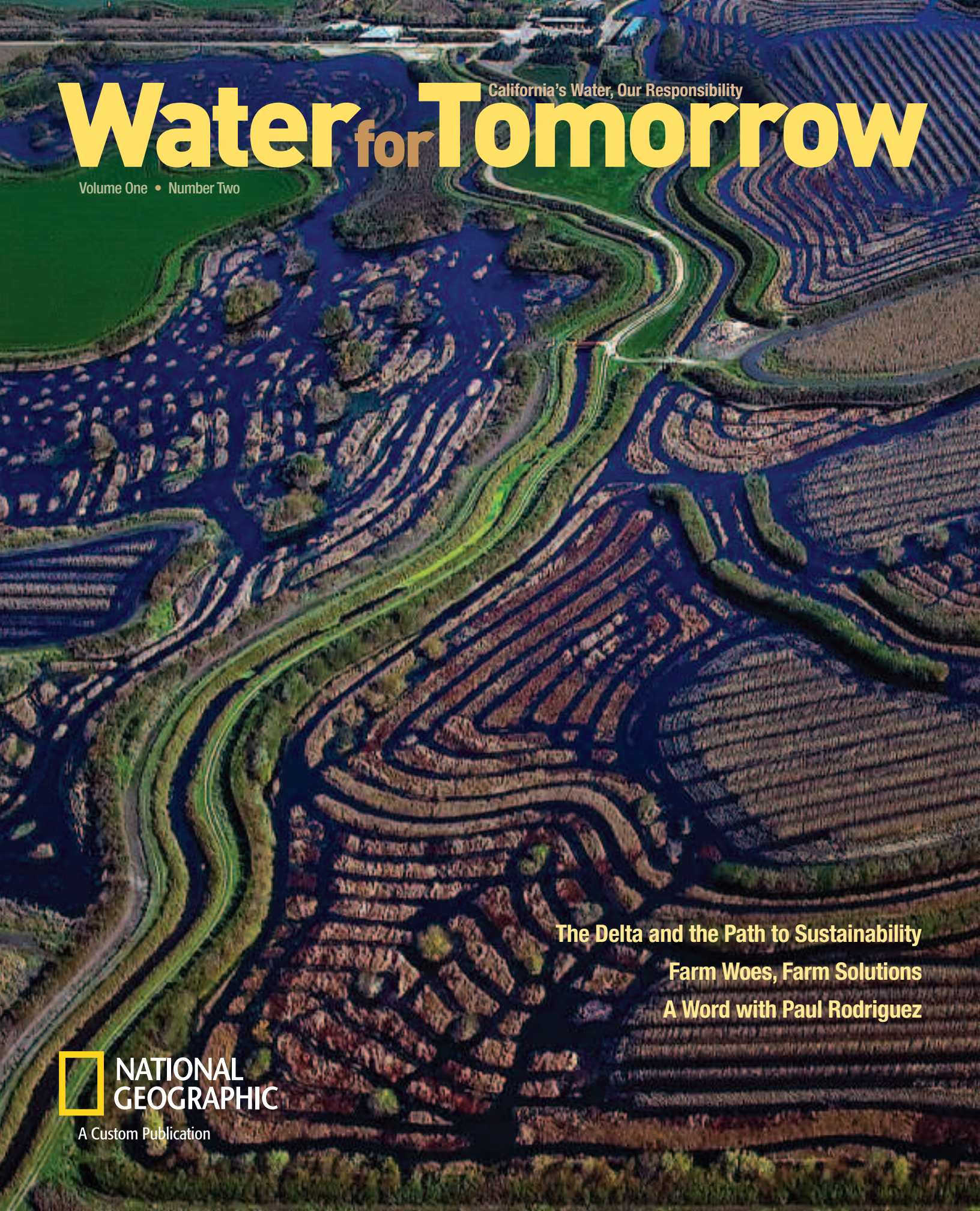

California's Water, Our Responsibility

Water for Tomorrow

Volume One • Number Two

The Delta and the Path to Sustainability

Farm Woes, Farm Solutions

A Word with Paul Rodriguez

NATIONAL GEOGRAPHIC

A Custom Publication

Canals near Bacon Island

dear READERS,

We've had the pleasure of hearing from a number of you since the first issue of *Water for Tomorrow* was published this spring. And we're pleased to report that the reaction has been very positive. One reader's comments were fairly typical: "Thanks for explaining the basics of our water in a way that finally makes sense. Keep up the good work! And just to let you know, everyone in the family is paying more attention to how we use water." That's gratifying news, to say the least.

In this issue we take a different tack on California water. First we focus on the problems associated with the Sacramento-San Joaquin Delta and the historic efforts being made to find long-term solutions that will meet the needs of our growing population while protecting our natural environment.

You'll also get a better understanding of just how difficult the lives of growers and farm workers have been this year. In "Farm Woes, Farm Solutions," we describe the devastating effects that a third year of drought and other water supply cuts have had in some farming communities. Even when water has been made available, the cost per acre-foot has soared in response to shortages. This has cut deeply into some incomes and made farming impossible for others. Elsewhere in this issue you will find reports on some of the new ideas that are being tried throughout the state to develop sustainable water solutions, at home, in business, and through local and regional conservation accords.

Meanwhile, we can all be grateful that almost everywhere these days — on TV, on the Internet, in the news, at the dinner table — there is a serious dialogue going on about how to solve California's water problems. Jim Tischer, Director of the California Water Institute at Fresno State, commented recently that he is cheered by the degree of commitment that he hears at every level from the state house to local leadership. "It's different from what we've seen in the past," the agricultural specialist says. "Exchanges are respectful. Feelings are heartfelt. That hasn't happened before." Tischer predicts that it's going to take at least ten years to get everything right, but he's optimistic that we'll get there. Meanwhile, your editors will be watching and reporting.

Sincerely,

Wendy B. Murphy
Editor-in-Chief

Cover photo: Aerial photograph of patterns in a bird habitat on the South Fork of the Mokelumne River in the Delta.

Water for Tomorrow

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NEXT ISSUE

What changes are on the horizon? Next spring we'll look at state-of-the-art innovations being implemented across California to use water more efficiently. Also, the latest on climate change, water recycling, and the popularity of synthetic lawns.

Visit us online at www.waterfortomorrowmag.com for helpful links and to learn more about water conservation.

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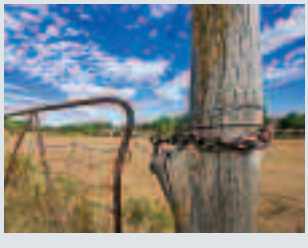

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The Los Angeles comedian explains how the shortages have affected the Central Valley communities.

The Delta and the path to Sustainability

The Sacramento-San Joaquin Delta is the largest estuary on the West Coast. It is the meeting place of Pacific Ocean tides and fresh water from the inland confluence of California's largest rivers.

This unique place — a maze of winding waterways, broad channels, meandering sloughs, sunken islands, wetlands, and more than 1,000 miles of aging earthen levees — stretches nearly 50 miles north to south from Sacramento to Tracy and 25 miles east to west from Stockton to Antioch. Taken as a whole, the Delta constitutes an irreplaceable natural and national treasure, comparable in ecological significance and beauty to the magnificent Florida Everglades. And like the Everglades, the Delta has grown over time to serve many competing needs, a massive task that is managed with increasing difficulty.

The Delta is a major way station for countless species of migrating birds that twice yearly traverse the Pacific Flyway. Two-thirds of California's salmon also pass through Delta waters, and hundreds of other native plants and aquatic species of environmental significance live there. The Delta is also the hub of California's public water supply, providing drinking water to 25 million people. Billions of gallons of water from Northern California's watersheds are channeled through the Delta to pumping stations that serve the San Francisco Bay Area, Southern California, and millions of acres of farmland in the San Joaquin Valley, fueling California's economy. This distinct area also serves as a thriving recreational playground and is a route of railroads, gas pipelines and highways of statewide importance. It is the place where over half a million people live and work. Just since the 2000 census, the towns and cities of the Delta have collectively grown by 18 percent.

This densely utilized complex of natural and manmade features has always been exceedingly fragile and the Delta's ability to simultaneously serve all these roles is now in jeopardy. Fish populations are at or near record low numbers. The declining environment has triggered new state and federal restrictions on the ability of the statewide water system to transport water across the Delta. The result is the prospect of shortage or near-shortage water conditions for many parts of the state for years to come absent a comprehensive solution. The stakes are high, both for the environment and the state economy.

Scientific studies suggest the Delta's survival depends on finding a more sustainable approach to managing the Delta. As the 21st century gets under way, new realities are unfolding. Climate change, earthquake risk and rising sea levels are not just theoretical concerns. They are emerging challenges that could profoundly alter the Delta.

Equally important, our consciousness of the critical need to protect the natural environment has grown. The existing system was built in another era when there were different public expectations and less knowledge of how the Delta would evolve. Our challenge today is to protect the environment and secure reliable water supplies for the state's economy. And for the first time, there is agreement that the status quo will no longer work in the Delta.

Restored wetlands at Decker Island

State and federal leaders, water districts, farmers, environmental groups and Delta communities are all searching for sustainable solutions.

Today's Delta in Distress

The Delta's earthen levees, some built in the 19th century, are no match for today's conditions. (See "In the Beginning…" below). Concerns about levee breaches have increased in recent years, and due to subsidence of the Delta's peat soils some islands are now 15 feet or more below sea level, making the potential for catastrophic flooding and loss of life and property very real. The 2005 tragedy of Hurricane Katrina and the flooding of New Orleans raised concerns about the levees several notches and the concerns weren't just about weather-born damage.

One of California's most recent levee breaks occurred on an ordinary day at the Jones Tract in 2004. Repairs tallied $90 million and brought home the painful realization that had a major flood or earthquake been the trigger, the losses

IN THE BEGINNING...

When first explored by the Spanish in the 1770s, the Delta presented a landscape very different from what exists today. Virtually free of human activity, it was an ever-changing patchwork of low-lying marshes covered with native tules and other grasses, and shifting channels, through which fresh waters en route to San Francisco Bay and the Pacific meandered. The Delta peat soils were produced from decaying marshland tules over the last 6,000 years. A wondrous diversity of land, air and sea wildlife lived here, each occupying its own niche in the food chain. But change was soon to come.

Beginning in the 1850s, disappointed gold prospectors began farming some of the drier, higher islands. When the peaty soil was found to be extraordinarily deep and fertile, developers began more extensive and unregulated reclamation projects, eventually using huge clamshell-type dredges to transform the adjoining marshes into a series of improved channels and islands, surrounded by compacted earthen levees. The soils of the Delta islands subsided or dropped through a combination of farming practices and natural organic oxidation.

Today, the Delta's farmers and farm workers raise such crops as asparagus, pears, corn, grain and hay, sugar beets and tomatoes. Others living near the Delta work in the shipping industry or provide services to recreational fishermen and boaters. Theirs is a unique life, but scientific experts predict that some islands will be lost to rising sea levels before the end of the century, no matter what decisions are made in Sacramento about how best to revitalize the Delta.

Left to right: Drought-stricken western San Joaquin Valley; American White Pelicans; Treated drinking water from the Delta serves 200,000 people in Alameda County, 25 million statewide. Photo Credit DWR

could have totaled billions of dollars. Such a widespread event would have also disrupted the Delta's two major export pumps and their ability to provide reliable, clean water for months if not years.

Coincidentally, 2004 brought to a head the declining state of the Delta's ecosystem — routine fish surveys that year found that nine of the Delta's native fish populations were either seriously decreasing or near extinction, including the Delta smelt, a species protected under the federal and state Endangered Species Acts. Though a number of factors played a role in the decline, water project operations in the Delta were at first singled out as a major contributor.

Other contributors to the disruption of the Delta ecosystem are now raising concerns. One is the growth of invasive aquatic and plant species that increasingly compete for the food supply. Another is the infusion of wastewater discharges, including more than one billion gallons of municipal wastewater daily from over 300 sources. Heated water from power plants, run-off including herbicides and pesticides from local farms and urban lawns, petroleum product run-off from roads, vehicles and marine shipping, and excessive low dissolved oxygen levels during the summer months in the Stockton Ship Canal are other stressors on the system.

Between 2007 and 2008, federal courts and the California Fish and Game Commission imposed substantial limits on the amounts of fresh water exported through the Delta. Additionally, Governor Arnold Schwarzenegger created an independent blue ribbon task force charged with developing a long-term plan for a revitalized Delta.

In the Delta Vision report issued in late 2008, the task force presented a series of bold recommendations that included reducing or changing the patterns and timing of water diversions to accommodate the spawning of endangered fish as well as the building of new facilities to convey and store fresh water. The report also called for a new independent governance system to coordinate the actions of about 200 local, state and federal agencies in the Delta while urging state legislators to make major financial investments in the Delta's revitalization to achieve these goals.

The Way Forward: the Bay Delta Conservation Plan

Guiding the Delta's environmental revitalization process is the Bay Delta Conservation Plan (BDCP), launched in 2006. This is the largest and most ambitious habitat and natural communities conservation plan ever attempted in the U.S. It's being prepared through the collaboration of state, federal, and local water agencies, state and federal fish agencies, and independent environmental organizations. The BDCP is funded by water users and public input is welcomed.

The plan takes a holistic approach to solving ecologically conflicting demands while eliminating more costly, often less effective, project-by-project, species-by-species permitting. Where feasible the BDCP proposes elements that complement other existing land uses. To address the challenges of habitat restoration, the plan seeks to reduce or eradicate invasives, toxic pollutants, including agricultural pesticides and herbicides, and other impairments to water quality. At the same time the BDCP will modernize the water conveyance system so as to put the Delta more in harmony with the natural tidal movements in the estuary. This will likely mean physically separating portions of the water conveyance system, routing an agreed upon share of water to the pumps south of the Delta by means of a canal, a large underground tunnel, or some combination of the two. The chosen system must be resistant to earthquake and flooding damage and have the capacity to move water during periods of maximum flows in wet seasons.

The BDCP calls for water users who rely on the state and federal water projects to pay for its implementation along with mitigation of any environmental impacts. A joint Environmental Impact Report and Environmental Impact Statement (EIR/EIS) is scheduled to be ready for public comment in 2010. The plan, once approved, is to be implemented over the next 50 years.

Farm Woes, Farm Solutions

"Food Grows Where Water Flows" is a popular bumper sticker in many parts of California. These days the slogan's harsh truth leaves a bitter taste. Many of California's farmers have reason to be worried about the future of their livelihoods and the state's $36.6 billion agricultural industry.

A tractor removes dead trees in the Westlands Water District.
Photo Credit: Doug Park

Water deliveries from the federal and state water projects in the Delta are at historically low levels owing to natural drought and regulatory actions, and there is no certainty of when things will get better. Farmers in the western San Joaquin Valley, which is heavily dependent on water conveyed through the Delta, have been especially hard hit. As a result of sharp cutbacks — in some cases as much as a 90 percent cut from the contracted amount — thousands of acres of the world's most productive farmlands have been idled this year and may be idled for some time to come. Water shortages in Fresno County had by mid-summer left 262,000 acres fallow. Throughout the region the number of acres out of production is now approaching 500,000 acres. Almond growers, for example, are feeling the direct impact as some are bulldozing acres of mature trees due to a lack of water.

Farmers in north San Diego County are also hurting. Starting in 2008 water supplies that serve this area from the Delta were cut by 30 percent as a result of pumping restrictions to protect fisheries in the Delta. In turn, farmers have had to make very tough decisions including stumping avocado trees or removing citrus trees altogether in order to continue farming with reduced water supplies.

To supplement extraordinary water needs in the San Joaquin Valley, many growers are to a greater or lesser degree burning through reserves brought up from underground aquifers. This strategy, as currently practiced, is unsustainable. Even in the best of times, California farmers get 30 percent of their water this way and considerably more in drought years when surface water cutbacks occur. This practice of groundwater overdraft compares to mining a finite resource. Thus, when years of drought occur, the water table may drop dangerously. Where the surface of the aquifer was once perhaps 10 feet below farm fields, it is now down hundreds of feet in some areas, putting it beyond the reach of older drilled wells. Overdrawn aquifers present a critical loss not just for current crops but they can also have consequences that last well beyond the return of a rainy season, including increased costs of drilling and pumping, land subsidence, and degraded water quality, all of which are being experienced now in parts of the San Joaquin Valley.

Fallowed farmlands also translate into unemployment. According to Richard Howitt, agricultural economist at the University of California at Davis, the Central Valley's local economy has already lost tens of thousands of farm and support jobs. An estimated $1 billion in income and farm-related wages has also been lost. Indeed, the unemployment rate in Mendota, a dusty city of 9,870 residents west of Fresno where high unemployment is a long-term problem, rose to 41 percent in 2009. Its food banks and other social service agencies are overwhelmed trying to meet the growing social and economic needs before them. Pedro Miranda, a 30-year-old farm worker with a wife and baby to support is typical.

Left to right: A dry San Joaquin Valley, Photo Credit DWR; Drip irrigation; Micro Sprinklers irrigating crops in San Joaquin Valley, Photo Credits: Mel Machado

"I've been going from farm to farm looking for work for a long time, and all I can get is one or two days of work a week. My baby needs food. I need work."

Todd Allen, a third-generation local farm owner, is doing only slightly better, a fact underscored by the sea of brown and

stunted wheat stalks that stretch before his farm. Allen expects to harvest just 40 of his 600 acres this year, something he will do himself, having had to lay off all 10 of his employees. "Without water, I'm nothing," he says.

Investing in Efficiency

Crisis is the mother of invention, and in recent years it has brought about a variety of innovative water conservation practices — especially in crop irrigation. These improved technologies are allowing farmers to get the most out of every drop.

As recently as 2001, half of California farmers used non-pressurized flood or furrow irrigation, the choice driven by availability and relative low cost. Increasingly favored are pressurized systems such as sprinklers or surface drip irrigation, which are more costly to install but apply water with greater efficiency. They can be fine-tuned to existing sun, temperature, humidity, and wind conditions using a combination of global positioning satellites, wireless communications and sophisticated irrigation control software.

Subsurface micro irrigation, commonly referred to as "drip" irrigation, has been around since the 1980s. It is more expensive than traditional irrigation methods but delivers water under low pressure directly to the plants' root zone, typically through buried perforated flattened tubes, or "tapes." One remarkable micro irrigation application is linked to underground sensors that check moisture levels near the roots. The "wired" farmer gets real-time information by phone allowing him to adjust watering times from wherever he is and that helps his irrigation plan stay flexible and his crops stay right in the sweet spot of healthy growth — even with a lot less water. From 2003 to 2008 California farmers have invested over $1.5 billion in new irrigation technology. In Kern County alone farmers have installed enough drip tape in their fields to circle the globe twice.

Some farmers are also switching over from traditional crops like cotton, rice, sugar beets, and alfalfa to crops including seasonal vegetables, fruits, wine grapes, and nut crops. While the former crops use about the same amount of water in a given region as those that are replacing them, more recent crop choices can provide a greater return in net income for a given amount of applied water. Richard Howitt of UC Davis sees the new strategy of continuous improvement in water efficiencies as critical to California agriculture's survival through the 21st century. Through experiments overseen by the UC Cooperative Extension, a number of Central Valley growers have discovered that by cutting back on water for navel oranges and pistachios, known as regulated deficit irrigation, which is a form of dry farming, they are actually producing sweeter, denser, crisper, and higher-market value fruits and nuts than they did with more copious irrigation plans. The owners of Flatland Farm in Sonoma County as well as farmers in Santa Cruz are trying experiments with apples and tomatoes with similarly impressive results.

The 2009 growing season is gradually winding down, providing real information on how farmers have actually fared in this year of discontent. Based on what is already known, the U.S. Department of Agriculture has declared 50 of California's 58 counties natural disaster areas, thereby releasing some assistance funds. At the same time, growers all over the state are looking at their current practices, talking to their leaders in Sacramento, and hoping that through innovation and a little good luck, better days will come.

When the well is dry, we know the worth of water.

— Benjamin Franklin (1706 – 1790)

This page, clockwise from top left: Wind turbines in the Montezuma Hills, Photo Credit: DWR; Otters passing through Delta waters (DWR); Sunset over Suisun Marsh; Seals relaxing on a channel marker; Berkeley Marina, (DWR)

Opposite, clockwise from top left: A canal meanders through the McDonald Tract, (DWR); Consumnes River Preserve, Photo Credit: © Greg Douglas Photography; San Joaquin Valley, Millerton Lake, Photo Credit: John Elk III; A trunnion bridge spans the Sacramento River, (DWR); Owens Valley

FROM CONTROVERSY TO

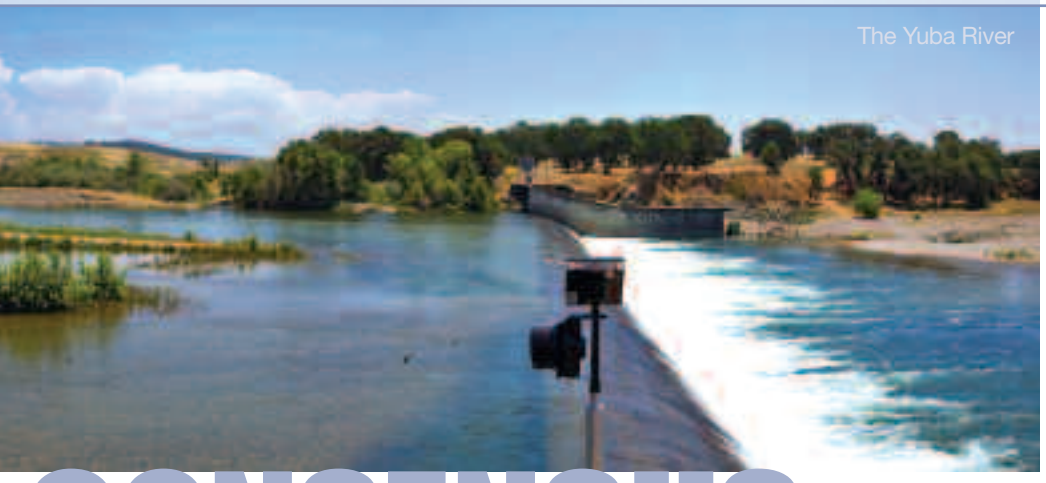
Finding sustainable solutions to California's long-term water crisis is going to be a complex process. Such solutions must support agricultural and urban needs alike, while still preserving environmental riches in ways that do not deplete resources that future generations will need. The answers will not come from the state government in Sacramento alone. Forging programs that satisfy the demands of competing stakeholders requires vision, imagination, legal expertise, and good will. Patience is also a critical tool of leadership, because reaching consensus can take many years.

In many parts of the state, groups have been warring with one another for decades over rights to water and environmental preservation. Each region has a unique set of stakeholder conflicts, existing patterns of land and water use, aging infrastructure systems, and water alternatives that have to be taken into account. Local emotions tend to run high.

That's why community activists, farmers, environmentalists and government leaders are greeting the implementation of several recent water-centric "accords" with such great excitement. Below we cite three such solutions whose innovative approaches manage to serve human needs for water (by which we mean sustainable levels of high-quality drinking water as well as sustainable quantities of water for agricultural and commercial use) while achieving environmental goals of long-term habitat protection and restoration.

The Lower Yuba River Accord, the newest of these landmark consensus agreements, is under way, following the success of two one-year "pilot programs." The Yuba Accord, developed collaboratively by 18 parties, including conservation groups, agricultural interests, and local, state and federal agencies, resolves nearly 20 years of controversy over the Lower Yuba River. This 24-mile stretch of river runs from the U.S. Army Corps of Engineers' Englebright Dam and Reservoir (built in 1941) to the Yuba's confluence with the Feather River. The Yuba Accord will begin to reverse damages done more than 150 years ago when miners, pursuing their dreams during the famed California Gold Rush, employed crude methods of hydraulic mining to unearth gold ore, choking the river with habitat-destroying debris in the process.

Through the Lower Yuba Accord, Yuba County Water Agency (YCWA) is releasing higher flows for salmon and steelhead, providing an additional 170,000 acre-feet of water annually. The new flows, which exceed state or federal requirements are essential, environmentalists say, to protect one of the last wild Chinook salmon runs in California's Central Valley. A comprehensive conjunctive use program, involving YCWA and seven local irrigation districts, ensures water supply reliability for farmers and salmon and steelhead in dry years. YCWA is also replacing older, diesel groundwater well engines with efficient electric motors. These water supplies will benefit fish and wildlife in the Bay-Delta ecosystem and supply cities and farms with desperately needed water in dry years. Revenues


The Yuba River

CONSENSUS

from area water transfers are being used to finance scientific studies on the Lower Yuba River and to strengthen local flood control levees. YCWA recently financed $40 million in costs for a new six-mile long Feather River setback levee to improve flood control protection for local residents and create 1,500 acres of wildlife habitat. In September, California Governor Arnold Schwarzenegger awarded YCWA the state's most prestigious environmental award for the Yuba Accord.

San Joaquin River Restoration Program (SJRRP), another notable agreement, grew out of a settlement reached in 2006 between several federal agencies and the Friant Water Users Authority (FWUA). It marked the end of an 18-year legal wrangle over the protection of fish habitat in the San Joaquin River below Friant Dam near Fresno. The State of California has expressed full support for the SJRRP settlement and is collaborating in carrying out the settlement.

The SJRRP, one of the most ambitious river restoration projects ever undertaken in the western U.S., has two goals. The first is to restore and maintain fish populations in the San Joaquin River, the 153-mile stretch between the Friant Dam and its merging with the Merced River. Successful restoration is defined as the ability for salmon and other significant fish species to achieve spring and fall runs sufficient to sustain their populations. The second goal of the SJRRP is to reduce or avoid water supply impacts to the affected water users. On average, long-term water deliveries from the dam will be reduced by about 15 percent under the terms of the settlement, but tools by which to recapture, recirculate, transfer, and exchange water to supplement that loss are to be developed under the settlement.

On March 30, 2009, an omnibus public land management bill that included funding for the SJRRP was enacted into federal law. The legislation provides a complex formula for state and federal payments of up to $390 million between now and 2019, with additional funding as needed after that.

The official rewatering of the San Joaquin River was launched on October 1, 2009.

The Lower Colorado River Multi-Species Conservation Program (LCRMSCP) is another distinctive agreement in which California is just one of three participants. The program came into being indirectly, as part of increasing pressure from the Interior Department that California live within the 4.4 million-acre-feet allotment of water per year that had been agreed upon in the 1922 Colorado River Compact. (For decades California had taken its full share plus 50 percent of any declared surpluses available, but with the continued population growth of the six other basin states, not only has the surplus largely disappeared but the river's environmental health has declined sharply.)

Since new, stricter guidelines were implemented in 2001, California has taken several bold measures to use its basic allotment of the Colorado River more efficiently, including the replacement of earthen canals with cement-lined conduits, groundwater banking, and water recovery. The state has also quantified the shares that the highest volume water districts — Imperial Irrigation District, Coachella Valley Water District and Metropolitan Water District of Southern California — can receive and trade as needed. As a result, the San Diego County Water Authority has been able to negotiate an historic water purchase from IID. But environmental concerns remain to be addressed and between 1995 and 2005 a joint federal and state 50-year program was initiated to enhance and restore habitat for numerous native plants and animal species living within the river's 100-year flood plain.

As these examples demonstrate, cooperation rather than competition is in everyone's best interest as we plan optimal ways to responsibly use and appreciate California's water and natural environment in ways that ensure sustainability for decades to come.

FETZER VINEYARDS: DEDICATED TO PRODUCING ECO-FRIENDLY WINES

Top to bottom: The vineyards are farmed without the use of synthetic pesticides or chemical fertilizers; bottles are made of lightweight glass resulting in fewer carbon emissions when shipped; all stems and seeds are composted and used as natural fertilizer; an aeration pond, where water is filtered and treated and reused for irrigation.

Fetzer Vineyards' Sustainability Director Ann Thrupp, PhD, works for an award-winning winery where she focuses a great deal of her time on nurturing the vineyards through creative water conservation. As California is responsible for more than 90 percent of U.S. wine production, her innovative solutions are being watched closely throughout the industry.

Since 1999, Fetzer's water use, drawn chiefly from the Russian River, has been reduced by 24 percent, largely through upgrading their irrigation methods. That's 6.6 million gallons per year, enough water to supply over 30 families for an entire year. "Using too much water is irresponsible," says Thrupp. "There's a struggle for resources these days, and water is a high priority. We're constantly looking for ways to improve, and once we find them, we make it a priority to share them with our fellow growers."

In the winter, when vines are dormant, water demands are low. With spring rains, there can be long periods of time when no supplemental irrigation is needed. "Here in Mendocino County, May through August is when we have extreme dryness, and that's when our water-consciousness is heightened," explains Thrupp. The best solution is drip irrigation.

To avoid overwatering, Fetzer Vineyards relies primarily on an array of sophisticated monitoring instruments that collect, store and transmit "real-time" information about soil moisture, humidity, temperature, wind speed and direction. This data allows the vineyard manager to gauge vine conditions and watering needs. Properly measured watering creates a better quality fruit and prevents stressing the vines.

Inside the winery, ozonated water is used for rinsing and cleaning tanks, bins, crushers, and barrels. It's a purification technique that doesn't harm the wood and is safe for employees to handle. "Ozonated water eliminates bacteria in the yeast and presents a really good alternative to the use of chlorine and other caustic chemicals, and the on-site well-water is made safe to recycle without further treatment through a simple environmentally-friendly ultraviolet filtering system," adds Thrupp.

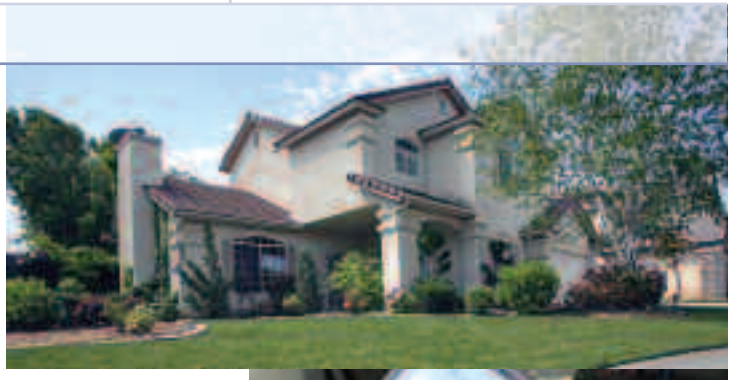
Another water-saver is the use of steam sterilization instead of hot water at the bottling facility. Steam sterilization not only does a better job, it consumes minimal water. New high-pressure, low-flow nozzles used in barrel washing also eliminate waste.

One hundred percent of the winery's wastewater is recycled. Four wastewater ponds fed by the production facilities have been converted into a natural system that employs gravel, sand filters, and a planted reed bed to treat and decompose organic waste. Low-energy aeration does the rest. And the treated water can then be used to irrigate the vineyard grounds and gardens. Absolutely no discharge is released to the Russian River.

Fetzer's Vineyard Manager Dave Koball — known as Mr. Water to policymakers and growers — has taken a leadership role in sharing the techniques of Fetzer with water policymakers to demonstrate their prudent use of precious water allocations.

Notes Thrupp, "With the environmental challenges we're facing, it's wonderful to work with an industry, a community and a company eager to make a lasting difference."

FRESNO RESIDENT FINDS WATER CONSERVATION IS FAMILY-FRIENDLY



Top to bottom: The Whitehouse home in Fresno, where changes are being made to conserve water; the comprehensive landscape plan; homeowner Laura Whitehouse and her 16-year-old son Adam clear space for more drought-resistant plants and shrubs.

Laura Whitehouse's introduction to landscape water conservation dates back to March 2009, when she and fellow Utility Advisory Committee appointees were briefed on Fresno's new state-mandated metering program. "For years we were able to use as much water as we wanted," says Whitehouse. "But when you put a price tag on something, people pay attention." The program is due to roll out over the next three years.

The water conservation supervisor for the City of Fresno, Nora Laikam, asked Whitehouse and her family to serve as a "demo" household in water conservation. Excited for the opportunity, they began collaborating with a city water conservation advisor whose services were provided at no cost.

Landscape conservation specialist Leslie Feathers and her team were dispatched to review the Whitehouse household. First, they conducted interior leak surveys in the kitchen, bathroom, and laundry room. Then they turned their attention to the conventional lawn setup with traditional sprinkler irrigation.

Feathers interviewed the family about their likes and dislikes. Her first recommendation was to eliminate the lawn and reduce the number of tall trees in the back yard. She also suggested replacing the water-guzzling shrubs with native plants better suited to Fresno's dry conditions.

With the Whitehouses' stipulation that re-landscaping costs be kept under $1,000 and that the new design be attractive to butterflies and hummingbirds, they proceeded with the makeover.

To keep costs low Laura recruited her husband Scott and their three children to do all but the heaviest lifting. A tree surgeon was called in to take down and remove a 40-foot liquid amber tree.

"Everyone had a role," recalls Feathers, "pruning, digging, rototilling, carrying discarded materials away. They were an enthusiastic labor force," she says approvingly.

Tree and plant substitutes included crape myrtles and desert willows, emu bushes, Spanish lavender, Russian sage, Texas ranger, bearded iris and moonshine yarrow. Some of these were purchased at nurseries; others were obtained free in a Fresno plant-exchange program.

The sprinkler system was replaced with drip irrigation, which, says Feathers, allows for more pointed delivery. "Water is slowly emitted at the plant base, which gives clay soil time to absorb moisture and create a deeper water profile for new plants. Roots embed themselves deeper in the soil and become more stable — and sustainable."

"I've always thought drought-tolerant landscaping meant crazy, desert-like yards filled with stones, cactus and tumbleweeds," says Whitehouse. "But these plants are so fragrant and beautiful. It's a delight to look out my back window. It's become an oasis."

The project has brought the entire Whitehouse family together. "The message of water conservation is permeating our home," says Whitehouse. "My husband and I have collaborated on raising our family, but never before like this. We're having great fun."

GoodBetterBest
Help Protect the Water Supply

In our premier issue we reviewed ways to conserve water in the kitchen, bathroom, and outdoors, but here we examine behaviors that play a key role in keeping your local water supply clean. Believe it or not, everyday activities around the house can contribute to polluted runoff. On a rainy day, fertilizers from lawns, oil from driveways, and toxic paints and solvents from decks can get washed into streams, rivers, and lakes, contaminating the local watershed. Here are some positive actions you can take to reduce pollution and increase water quality in your community.

Reduce Runoff

GOOD: Sink drains and toilets are not trashcans. Disposing of inappropriate items down drains and toilets can cause sewer back-ups and harm the public's health and the environment. Items that should only go in the trash include: band-aids, cleaning wipes, dental floss, cotton balls, hair, and especially expired or unused prescription and over-the-counter pharmaceuticals — these build up over time leaving trace amounts of chemicals in the water supply.

BETTER: In the yard and garden, apply only natural fertilizer and refrain from using herbicides and pesticides. Compost, manure, bone meal, and peat are excellent alternatives for a healthy landscape. Indoors, use only nontoxic household products whenever possible. There are many certified organic, environmentally friendly cleaning and personal care products that do not contain any hazardous chemicals, which might otherwise end up in the water supply.

BEST: Properly maintain your car. This will reduce the amounts of oil, coolant, antifreeze, and other hazardous fluids that otherwise leak onto the ground, inevitably getting washed into gutters and down storm drains. Remember that one quart of motor oil that seeps into groundwater can result in 250,000 gallons of polluted drinking water. Also, when purchasing oil make sure the store or service station has a program to buy back waste oil and dispose of it properly.

Dry farmland in Hughenden, Queensland

Australia's Big Dry

Australians know only too well what damage — economic, environmental, political, and human — a severe drought can bring.

They've been living with one since 2002 with no end in sight. The impact of their dry siege is being felt hardest in Australia's food bowl, which is the Murray-Darling basin in the southeastern part of the continent. Here, on a vast arid plain the size of France and Spain combined, 40 percent of the nation's agricultural produce is grown and 85 percent of the water used nationally for irrigation is collected and dispersed.

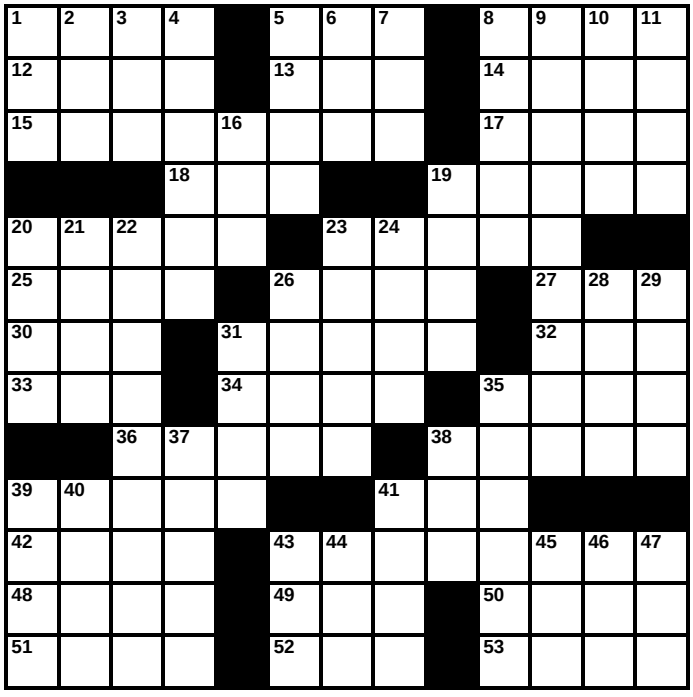
But by common acknowledgment, the good times are over. The once flourishing ecosystem of the Murray River is virtually gone and its steady flow, which normally supplied up to 90 percent of urban Adelaide's water supply, is at a near standstill. Even when the drought breaks, as it assuredly will some day, few environmental scientists expect Australia to return to the cooler, wetter conditions that farmers and developers relied on over the last half-century. With a sense of urgency, and only a fraction of the usual water allotments to hand out to this thirsty land, Australia's provincial and federal governments are now scrambling to figure out what to do about the belatedly acknowledged crisis and how to get the public to accept the tough conservation measures that must come.

"What we're seeing with this drought is a frightening glimpse of the future with global warming," says South Australia's premier, Mike Rann. He echoes the warnings of the UN Intergovernmental Panel on Climate Change which has predicted that the hotter, drier future will also bring more frequent and intense brush fires, tropical cyclones, significant loss of biodiversity, and coastal flooding. Not even the Great Barrier Reef is expected to escape catastrophic damage.

Reminiscent of California's experience, the crisis inevitably pits region against region, big cities against rural areas, environmentalists against farm interests, and growers of some crops against others in what is fast becoming a high-stakes competition for a shrinking water supply in many parts of the world. How Australians sort it all out may hold important lessons for the rest of us.

Brain GEYSER

By Rich Norris © 2009, Rich Norris



ACROSS

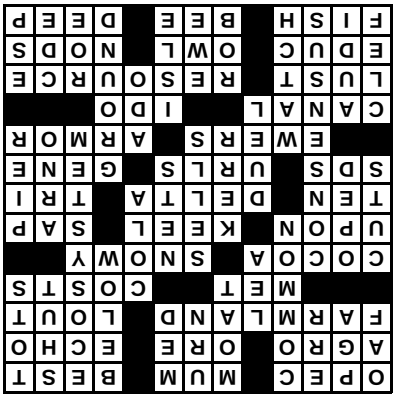
1. 1 Oil cartel, briefly
5. Tight-lipped
8. Top of the line
12. 15-Across prefix
13. Miner's find
14. Canyon rebound
15. Where crops are grown
17. Boorish type
18. Encountered
19. Revenue offsets
20. Hot after-school drink
23. Like weather that causes drifts
25. "Once ___ a time ..."
26. Boat stabilizer
27. Maple syrup base
30. Start of a countdown
31. Sacramento-San Joaquin drainage area
32. Prefix with cycle
33. '60s campus activist group: Abbr.
34. Info in links, on the www
35. Heredity unit
36. Wide-spouted pitchers
38. Knight clothes?
39. Man-made waterway
41. Chapel vow: 2 wds.
42. A deadly sin
43. Supply to draw on when needed
48. "No Child Left Behind" department: Abbr.
49. Big-eyed bird
50. Head-bobbing assents
51. Creature often immediately affected by diverted water
52. Honey maker
53. Not shallow

DOWN

1. Clumsy sort
2. Tiger Woods's group: Abbr.
3. To do it is human, they say
4. With 35-Down, area of shared interest
5. Watery zoo barrier
6. Coffee dispenser
7. ___ school (where future MDs go)
8. Downstairs, at sea
9. Unit of interdependent organisms sharing a habitat
10. Closed
11. Tiny tykes
16. Pasture
19. Pepsi or Coke
20. Budget reductions
21. Columnist's page
22. Majority of opinion
23. Peddles
24. Keeps after taxes
26. "The Galloping Gourmet" Graham
28. River of Florence
29. Docking site
31. Burr-Hamilton contest
35. See 4-Down
37. Pocket timepiece
38. "Much ___ About Nothing"
39. Musical staff insignia
40. German auto export
41. Castaway's spot
43. Steal from
44. Lamb's mom
45. Fish eggs
46. Letters after B
47. Sixth sense, for short

add it up

ANSWERS



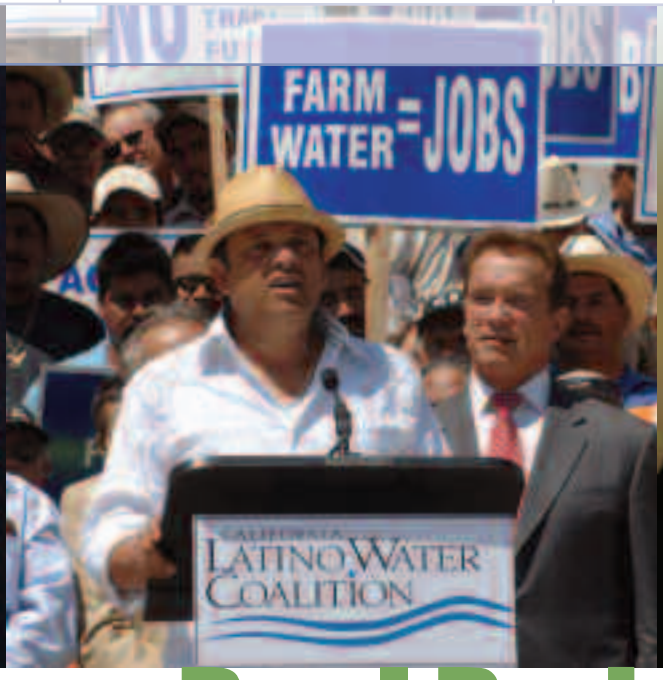
25 — gallons of water that can be conserved by watering a lawn before 8:00 a.m. — a practice that reduces evaporation

325,851 — amount of gallons in one acre-foot of water, or enough water to cover one acre to a depth of one foot

701 — miles of canals and pipelines that deliver water from north to south in California's State Water Project, the nation's largest state-built water-and-power development and conveyance system

125 — number of golf courses in California that are irrigated with recycled water

400 million — amount of dollars invested by local agencies across California to promote reducing water use



A Word with. . . Paul Rodriguez

The affable comic explains how water supply shortages are impacting farmers and his family.

Q. When did you get interested in California water issues?

A. I grew up as the youngest child of a large Mexican migrant labor family. We followed the harvest from Texas to Minnesota for years until settling in the San Joaquin Valley in the 1960s. Even after I found my way to Los Angeles to become a stand-up comic my heart remained in the farm community where my brothers and sisters still work. A couple of years ago I was asked to narrate a public TV documentary called "Salt of the Earth," about the problems of salt build-up in the water supply in the Central Valley, and that stirred my consciousness about water issues, too.

Q. Do you have a personal connection to the Central Valley?

A. I'm a landowner with several farms in the Orosi, Dinuba, and Orange Grove areas. I'm rarely out in the fields now — my work as a comedian keeps me in Los Angeles or on the road a lot — but I know what it means to farm without water! I also hear about the effects of the cutbacks from family and neighbors.

Q. How did you become co-leader of the California Latino Water Coalition?

A. As the drought situation worsened here I was approached by a number of local mayors and the Coalition to become their spokesman. I was reluctant at first because I'm not naturally an activist. To tell the truth, when I first got into this I thought I'd just sign a petition and walk up to the State Capital in Sacramento to deliver it. I wasn't even sure how well I'd do at that! I'm 54 years old and walking those 50 miles seemed like writing checks my body couldn't cash. But I made it! Part of what got me there was my sense of obligation to Cesar Chavez's memory. When I was five or so I rode on my mother's shoulders at some of those early Chavez marches to improve working conditions in the fields and Cesar sat at our dinner table many times. So when I was asked to get more involved I had to say yes. The suffering in my community was just too real. And by the way, it isn't just Latinos who've joined us in great numbers. I'm proud to say that the Coalition represents everyone — whites, Filipinos, blacks, as well as farm owners, farm workers, and farm suppliers. Water is, after all, not a racial issue or a simple economic issue. It's a life issue.

Q. What is your group's goal?

A. The Coalition believes that California has to come up with a workable set of changes to the old water policies — do it soon, and do it smarter than ever before. We support a combination of water bills and bonds that will increase California's water supply, restore farming to viability, improve water conservation, and at the same time revive the Delta in a more even-handed way. Smarter people than myself will have to figure out the specifics but we need to catch up with California's growth or everyone will suffer.

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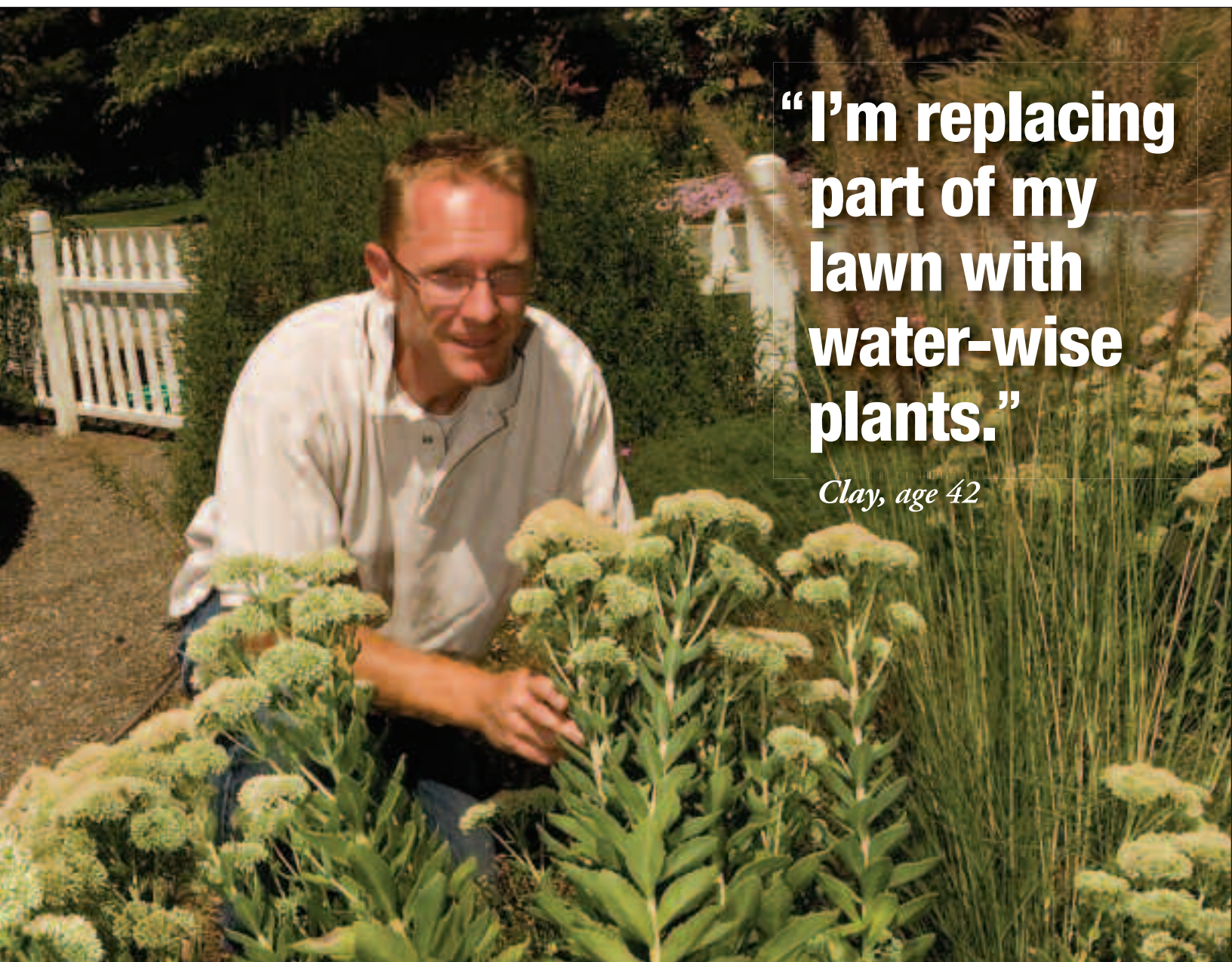

Clay is doing his part to save California's water. His water-wise plants are saving hundreds of gallons a month. For more water-saving ideas visit

http://www.saveourh2o.org

Save Our WATER

A message from the Association of California Water Agencies and the California Department of Water Resources